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Re: Thermal screening process for TPDES permits

To Whom It May Concern:

The Texas Parks and Wildlife Department (TPWD) appreciates the opportunity to provide comments to the Texas Commission on Environmental Quality (TCEQ) on the draft screening process for establishing thermal limits in TPDES water quality permits. TPWD is the agency with primary responsibility for protecting the state's fish and wildlife resources (Texas Parks and Wildlife Code §12.0011(a)) in addition to encouraging outdoor recreation on Texas water resources. In light of this role, we are concerned about water quality for fish and wildlife, as well as recreational uses of Texas water-ways. Additionally, we are charged with providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources (Texas Parks and Wildlife Code §12.0011(b)(3)). Please be aware that a written response to a TPWD recommendation or informational comment received by a state government agency may be required by state law. For further guidance, please see the attached Texas Parks & Wildlife Code Section 12.0011.

In light of this statutory mandate, we have reviewed the current draft thermal screening process for TPDES permits and offer our detailed comments, which are enclosed. TPWD has had representation at all four of the stakeholder meetings regarding this issue.

Thank you again for the opportunity to comment and for the ability to work collaboratively with the Standards Implementation Team (SIT) to conserve and protect Texas' important aquatic resources. If you should have any questions, please do not hesitate to contact me at (512) 389-8687.

Sincerely,


Anne Rogers
Water Quality Program Leader

Enclosure

cc: Ms. Cindy Hobson
Mr. Marty Kelly
Mr. James Murphy
Ms. Cindy Loeffler
Mr. Gordon Linam

TPWD Comments

1. TPWD is in support of a screening procedure that will require all industrial permit applications go through the same review process regardless of individual discharge characteristics or receiving water body type, thereby eliminating a risk-based approach to evaluating thermal discharges and increasing the transparency of the process to the public and stakeholders. Discharges determined to have a thermal component, should be evaluated through a flow chart similar to what is proposed in TPWD Attachment 1. There are several subjective questions in subsequent steps of the flowchart, however, which should be clarified before it is adopted. For example: How are all waters of the state protected from thermal discharges, not just those with set temperature criteria (both classified and unclassified water bodies have temperature change protection including actual temperature criteria for classified water bodies and as rise over ambient protection for unclassified water bodies)? How will the presence of state or federal threatened or endangered species factor in to the flow chart?
2. TPWD supports enhanced efforts to screen thermal discharges by requiring all permittees determined to have thermal discharges to conduct a thermal plume characterization study for their facility. This exercise is crucial in determining the extent and nature of the thermal mixing zones and their effects to the receiving water body. Except for language referring to “water body hydraulic characterization” or “highly site-specific analysis”, there is no mention of plume or thermal mixing zone studies for all thermal discharges, nor was there mention of analyses that determine vertical or horizontal protections in areas of thermal discharges that allow for fish passage up and down stream. Data such as ambient temperatures of the affected water body throughout the year, and the nature of the hydrology and mixing patterns of the receiving water body should be required for all thermal discharge permits. As is provided for in the 2014 Texas Surface Water Quality Standards (TSWQS) 307.8(b)(6), “Mixing zones must not preclude passage of free-swimming or drifting aquatic organisms to the extent that aquatic life use is significantly affected...” It should be noted that passage around a thermal mixing zone (thermal mixing zone and thermal plume are used interchangeably here) should still meet realistic physical passage requirements for affected aquatic organisms (i.e., sufficient depth both around and under the plume). For example, if the thermal plume extends 50% of the channel width, but the remaining 50% of the channel is a two-inch riffle, it is unrealistic to expect that most fish species could use that unaffected portion of the channel as a migratory pathway. Likewise, if the thermal mixing zone extends to within inches of the bottom of a deep channel, it might preclude certain organisms which are limited as to how deep they will migrate from finding sufficient passage.
3. TPWD recommends adding a step to the flow chart to evaluate whether a thermal discharge has the potential to cause adverse effects on species particularly affected by temperature variation or to state or federally designated threatened or endangered species. There are several available sources of information for presence and distribution of species throughout Texas, including the TPWD Natural Diversity Database (https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/); the Rare, Threatened, and Endangered Species of Texas (RTEST) database (https://tpwd.texas.gov/landwater/land/maps/gis/ris/endangered_species/index.phtml); TPWD oyster reef maps for specific bays in Texas; and county lists from other peer reviewed sources. The administrative rule specifically listing mussel sanctuaries may be found in 31 TAC 57.157(d)(2). Mussels are of particular concern with regards to thermal discharges. Much is being learned about the abundance and distribution of species in Texas as well as aspects of water quality that affect these communities. There is research that shows many species in the south are struggling and are being pushed to the upper limits of their thermal tolerances

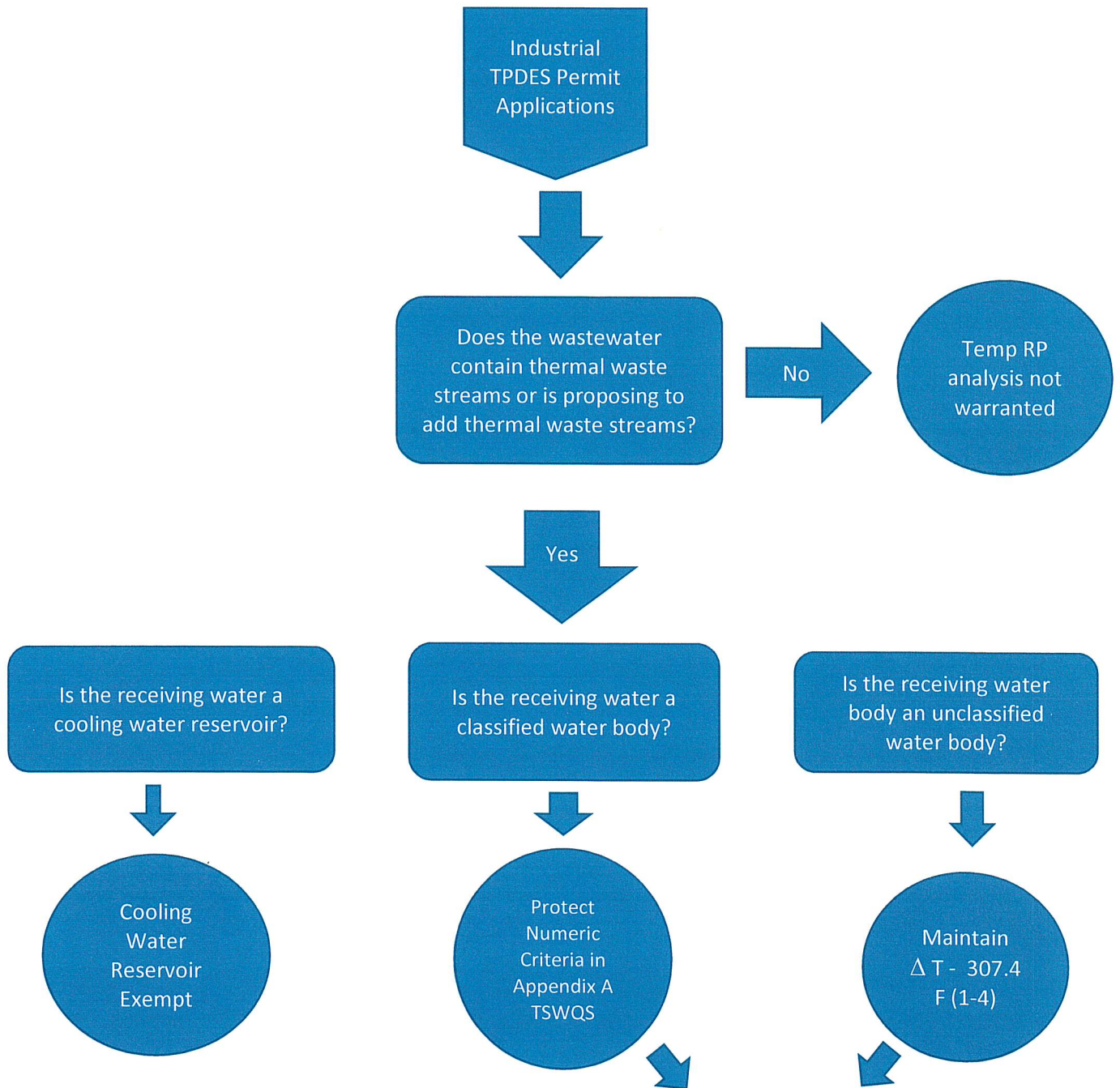
even in the absence of thermal discharges. TPWD recommends that any proposed thermal discharge outfalls in areas of known mussel sanctuaries listed in 31 TAC 57.157(d)(2) and other significant populations of mussels be relocated downstream of these areas.

4. In the section entitled "General Information", the next to last sentence states, "The principal permitted parameter of concern in the screening analysis is the daily average temperature." Will these permits be subject to a daily maximum temperature as well? In other words, if a permittee only discharges for a few hours each day, but the discharge is very hot, the daily average temperature limit may be met, but a daily maximum temperature limit would not. We would like to reiterate that while maximum temperature standards only apply to the classified segments listed in Appendix A of the TSWQS, rise over ambient temperature (ΔT) criteria apply to all water bodies in Texas regardless of flow type or aquatic life use. This includes intermittent unclassified streams as well as those identified in Appendices A and D of the TSWQS.
5. In the section entitled "Screening Procedure Principles", there is reference to supplemental procedures that "will be spelled out in the Implementation Procedures for existing/proposed thermal discharges to water bodies listed as impaired on the 303(d) list for elevated temperature and those water bodies known to contain aquatic dependent endangered species." TPWD would like to review these supplemental procedures and how these water bodies known to contain endangered species will be identified in the process.
6. In the section entitled "Water Body Applicability", it states, "Intermittent water bodies with minimal aquatic life use will not undergo screening, however, downstream waters with higher aquatic life uses may be screened for potential thermal impacts." Please explain how this would be determined and provide an example of a scenario where this would be the case. It further states that "the screening analysis will be limited to one mile below the discharge point unless there is reason to believe the scope of the analysis needs to be extended for reasons such as sensitive nursery habitat or the presence of endangered species located downstream." TPWD believes this is an arbitrary length designation and may not be protective in many systems, especially in bays, reservoirs, or during times of low or no flow. Please explain how this length was determined and how this is protective of aquatic resources and how the presence of "sensitive nursery habitat or the presence of endangered species" will be determined. We also recommend state and federally listed threatened species be considered in addition to the endangered ones.
7. In the section entitled "Critical Conditions/Mixing Zone", it states, "For temperature screening, effluent temperatures should be evaluated using ambient receiving water body temperatures consistent with a summertime condition. Likewise, dilution potential used in the screening analysis should represent conservative values typical of the summer season. In cases where effluent temperature does not follow ambient temperature patterns, a winter reasonable potential analysis may be performed to verify compliance with temperature criteria." It is unclear how thermal loads "...are expected to occur primarily during the summertime (June-August)." Please clarify the typical discharge patterns that occur with thermal dischargers. TPWD believes thermal impacts should be evaluated for all seasons of the year. Water temperature changes associated with the seasons, such as the warming of water from winter

into spring, can serve as one of the spawning cues for fish species. If summertime conditions are only considered, critical ecosystem functions such as this may not be considered. We therefore recommend that for temperature screening, effluent temperatures be evaluated using ambient receiving water body temperature consistent with the season, rather than only using the summertime condition.

8. The "Critical Conditions/Mixing Zone" section also refers to the size of the mixing zones for critical mixing conditions. It is not clear when larger or smaller mixing zones will be employed. Please provide example scenarios and clarify under what conditions the size of the thermal mixing zone will be different from those used for other water quality criteria compliance. This section further discusses the use of ambient summer temperatures for analysis consistent with values used for dissolved oxygen modeling and that 30.5° C will be used "as derived from statistical analysis of summer temperatures collected throughout the State." We recommend similar analysis be performed to derive ambient water temperatures for the other three seasons. Please provide the metadata associated with these statistical determinations so it is clear the period of record, times of day, and sources of the temperature data that was used. If a water body has continuous site-specific data associated with that site, it is recommended that this data be used over the default 30.5° C.
9. We reiterate our previous comment on what constitutes a rise in temperature over the ambient condition. In many streams in Texas, base flow is dominated by wastewater effluent, especially during times of drought. When a stream is dominated by other discharges upstream of a thermal discharge (even if those upstream discharges are not heated) it may be difficult to determine what true ambient temperature conditions are. It would be appropriate in these circumstances to use temperature data from a stream in an adjacent watershed in the same ecoregion with similar characteristics and with no (or minimal) discharges which may alter stream temperatures, as the basis for determining ambient in-stream temperature conditions. Similarly, this use of adjacent stream data for determining ambient temperature could be applied when the stream is dry upstream of the thermal discharge.
10. In terms of determining the appropriateness of which models to use, we would like to get clarification on why TCEQ is promoting the use of the waste load allocation equation over the mass balance equation as described in the EPA's "NPDES Permit Writers' Manual."
11. Regarding the modeling of possible effects from a thermal discharge, it is important to ensure all models allow for the establishment of a mixing zone that is water body specific and allows for both horizontal and vertical fish passage through the area of the thermal discharge. For example, a comment was made at one of the stakeholder meetings that the QUALTX model assumes complete mixing across the stream, so it does not use a mixing zone in the model. We suggest only using models that allow for variable mixing zones. In the screening method section for "Simple Heat Balance", it states, "For water bodies receiving **small thermal loads** or that **have high thermal load assimilative capacity**, simple, conservative heat balance calculations can sometimes be used to perform a reasonable potential analysis." And in the "Highly Site-Specific Analysis" section, it states, "For the **largest thermal discharges**, highly site-specific analyses will likely be warranted." Please describe how these qualitative terms will be determined and defined.

TPWD Attachment 1.



Conduct receiving water characterization to ensure protection of natural resources including:

- Fish passage (mixing zone must not preclude passage of free-swimming or drifting aquatic organisms...)
- Seasonal spawning
- Downstream populations
- State and Federal T and E Species
- Freshwater mussel sanctuaries/significant populations
- Hydrology – perennial vs. intermittent